

IT IS CLAIMED:

1. A computer-executed method for classifying a target document in the
5 form of a digitally encoded natural-language text into one or more of two or more
different classes, comprising the steps of:
 - (a) for each of a plurality of terms selected from one of (i) non-generic words
in the document, (ii) proximately arranged word groups in the document, and (iii) a
combination of (i) and (ii), determining a selectivity value calculated as the
10 frequency of occurrence of that term in a library of texts in one field, relative to the
frequency of occurrence of the same term in one or more other libraries of texts in
one or more other fields, respectively, and
 - (b) representing the document as a vector of terms, where the coefficient
assigned to each term is a function of the selectivity value determined for that
15 term.
 - (c) determining for each of a plurality of sample texts, a match score related
to the number of descriptive terms present in or derived from that text that match
those in the target document, where each of the plurality of sample texts has an
associated classification identifier that identifies the one of more different classes
20 to which that text belongs,
 - (d) selecting one or more of the sample texts having the highest match
scores,
 - (e) recording the one or more classification identifiers associated with the
one or more sample texts having the highest match scores, and
 - 25 (f) associating the one or more classification identifiers from step (e) with
the target document, thereby to classify the target document as belonging to one
or more classes represented by at least one of the classification identifiers from
step (e).
- 30 2. The method of claim 1, wherein the sample texts are texts in the libraries
of texts from which the selectivity values of target terms are determined.

3. The method of claim 2, wherein each library of texts is defined by one or more text classifications, and which further includes, following said classifying step (e), adding the target document in one of said library of texts corresponding to the target text classification.

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4. The method of claim 1, wherein the selectivity value associated with a term in is related to the greatest selectivity value determined with respect to each of a plurality $N \geq 2$ of libraries of texts in different fields.

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5. The method of claim 1, wherein the selectivity value assigned to a descriptive term is a root function of the frequency of occurrence of that term in said library, relative to the frequency of occurrence of the same term in one or more other libraries of texts in one or more other fields, respectively, and the match score is weighted by the selectivity values of the matching terms. .

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6. The method of claim 1, wherein only terms having a selectivity value above a predetermined threshold are included in the vector.

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7. The method of claim 1, wherein the terms include words in the document, and the coefficient assigned to each word in the vector is also related to the inverse document frequency of that word in one or more of said libraries of texts.

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8. The method of claim 6, wherein the coefficient assigned to each word in the vector is the product of a function of the selectivity value and the inverse document frequency of that word.

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9. The method of claim 1, wherein the terms include words in the document, and step (a) includes (i) accessing a database of word records, where each record includes text identifiers of the library texts that contain that word, and associated library identifiers for each text, and (ii) using the identified text and library identifiers to calculate one or more selectivity values for that word.

10. The method of claim 9, wherein carrying out the step of determining match scores includes (i) accessing said database of word records to identify library texts associated with each descriptive word in the target text, and (ii) from the identified texts recorded in step (i), determining text match score based on the number of descriptive words in that text weighted by the selectivity values of the matching words.

11. The method of claim 1, wherein the terms include word groups in the document, and said database further includes, for each word record, word-position identifiers, and wherein step (a) as applied to word groups includes (i) accessing said database to identify texts and associated library and word-position identifiers associated with that word group, (ii) from the identified texts, library identifiers, and word-position identifiers recorded in step and (i) determining one or more selectivity values for that word group.

12. The method of claim 11, wherein carrying out the step of determining match scores includes (i) recording the texts associated with each descriptive word group, and (ii) determining a text match score based, at least in part, on number of descriptive word groups in a text, weighted by the selectivity values of such words groups.

13. The method of claim 1, wherein each different library of texts defines a class having its own classification identifier.

14. The method of claim 1, wherein each library of texts contains texts with multiple different classification identifiers.

15. The method of claim 1, wherein said sample texts and corresponding classification identifiers are selected from the group consisting of:

(a) libraries of different-field patent texts, and said classification identifier includes at least one patent class and, optionally, at least one patent subclass;

(b) libraries of different-field research grant proposals or reports, and said classification identifier includes a research funding class within that agency;

(c) libraries of case reports or head notes relating to different legal topics, and said classification identifier includes one or more different legal topics; and

5 (d) libraries of different-field scientific or technical texts, and said classification identifier includes at least one of a plurality of different science or technology filed classifications.

10 16. An automated system for classifying a target document in the form of a digitally encoded text as belonging to one or more of a plurality of different classes comprising

(1) a computer,

(2) accessible by said computer, a database of word records, where each record includes text identifiers of the library texts that contain that word, associated
15 library and classification identifiers for each text, and optionally, one or more selectivity values for each word, where the selectivity value of a term in a library of texts in a field is related to the frequency of occurrence of that term in said library, relative to the frequency of occurrence of the same term in one or more other libraries of texts in one or more other fields, respectively,

20 (3) a computer readable code which is operable, under the control of said computer, to perform steps comprising:

(a) for each of a plurality of terms selected from one of (i) non-generic words in the document, (ii) proximately arranged word groups in the document, and (iii) a combination of (i) and (ii), determining a selectivity value calculated as the
25 frequency of occurrence of that term in a library of texts in one field, relative to the frequency of occurrence of the same term in one or more other libraries of texts in one or more other fields, respectively, and

(b) representing the document as a vector of terms, where the coefficient assigned to each term is a function of the selectivity value determined for that
30 term.

(c) determining for each of a plurality of sample texts, a match score related to the number of descriptive terms present in or derived from that text that match

those in the target document, where each of the plurality of sample texts has an associated classification identifier that identifies the one of more different classes to which that text belongs,

(d) selecting one or more of the sample texts having the highest match
5 scores,

(e) recording the one or more classification identifiers associated with the one or more sample texts having the highest match scores, and

(f) associating the one or more classification identifiers from step (e) with the target document, thereby to classify the target document as belonging to one
10 or more classes represented by at least one of the classification identifiers from step (e).

17. The system of claim 16, wherein the terms include words in the document, and step (a) includes (i) accessing a database of word records, where
15 each record includes text identifiers of the library texts that contain that word, and associated library identifiers for each text, and (ii) using the identified text and library identifiers to calculate one or more selectivity values for that word.

18. The system of claim 17, wherein carrying out the step of determining
20 match scores includes (i) accessing said database of word records to identify library texts associated with each descriptive word in the target text, and (ii) from the identified texts recorded in step (i), determining text match score based on the number of descriptive words in that text weighted by the selectivity values of the matching words.

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19. The system of claim 16, wherein the terms include word groups in the document, and said database further includes, for each word record, word-position identifiers, and wherein step (a) as applied to word groups includes (i) accessing said database to identify texts and associated library and word-position identifiers
30 associated with that word group, (ii) from the identified texts, library identifiers, and word-position identifiers recorded in step and (i) determining one or more selectivity values for that word group.

20. The system of claim 19, wherein carrying out the step of determining match scores includes (i) recording the texts associated with each descriptive word group, and (ii) determining a text match score based, at least in part, on number of
5 descriptive word groups in a text, weighted by the selectivity values of such words groups.

21. The system of claim 16, wherein said library texts and corresponding classification identifiers are selected from the group consisting of:

- 10 (a) libraries of different-field patent texts, and said classification identifier includes at least one patent class and, optionally, at least one patent subclass;
- (b) libraries of different-field research grant proposals or reports, and said classification identifier includes a research funding class within that agency;
- (c) libraries of case reports or head notes relating to different legal topics,
15 and said classification identifier includes one or more different legal topics; and
- (d) libraries of different-field scientific or technical texts, and said classification identifier includes at least one of a plurality of different science or technology filed classifications.

- 20 22. Computer readable code for use with an electronic computer and a database word records in classifying a target document in the form of a digitally encoded text as belonging to one or more of a plurality of different classes, where each record in the word records database includes text identifiers of the library texts that contain that word, an associated library identifier for each text, an
25 associated classification identifier for each text, and optionally, one or more selectivity values for each word, where the selectivity value of a term in a library of texts in a field is related to the frequency of occurrence of that term in said library, relative to the frequency of occurrence of the same term in one or more other libraries of texts in one or more other fields, respectively, said code being
30 operable, under the control of said computer, to perform steps comprising:
- (a) for each of a plurality of terms selected from one of (i) non-generic words in the document, (ii) proximately arranged word groups in the document, and (iii) a

combination of (i) and (ii), determining a selectivity value calculated as the frequency of occurrence of that term in a library of texts in one field, relative to the frequency of occurrence of the same term in one or more other libraries of texts in one or more other fields, respectively, and

- 5 (b) representing the document as a vector of terms, where the coefficient assigned to each term is a function of the selectivity value determined for that term.

- (c) determining for each of a plurality of sample texts, a match score related to the number of descriptive terms present in or derived from that text that match
10 those in the target document, where each of the plurality of sample texts has an associated classification identifier that identifies the one of more different classes to which that text belongs,

- (d) selecting one or more of the sample texts having the highest match scores,

- 15 (e) recording the one or more classification identifiers associated with the one or more sample texts having the highest match scores, and

- (f) associating the one or more classification identifiers from step (e) with the target document, thereby to classify the target document as belonging to one or more classes represented by at least one of the classification identifiers from
20 step (e).